



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE

United States Patent and Trademark Office

Address: COMMISSIONER FOR PATENTS

P.O. Box 1450

Alexandria, Virginia 22313-1450

www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/584,342	06/23/2006	Hiroshi Suzuki	128458	3063
25944 7590 02/03/2009 OLIFF & BERRIDGE, PLC P.O. BOX 320850 ALEXANDRIA, VA 22320-4850				
EXAMINER				
ARCIERO, ADAM A				
ART UNIT		PAPER NUMBER		
1795				
MAIL DATE		DELIVERY MODE		
02/03/2009		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/584,342

Applicant(s)

SUZUKI ET AL.

Examiner

ADAM A. ARCIERO

Art Unit

1795

Period for Reply -- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 September 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3,5 and 8-22 is/are pending in the application.
- 4a) Of the above claim(s) 13-22 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) 1-3,5 and 8-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/S508)
Paper No(s)/Mail Date 04/22/2008
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

FUEL CELL DISASSEMBLY METHOD AND FUEL CELL

Examiner: Arciero

S.N. 10/584,342

Art Unit: 1795

January 23, 2009

DETAILED ACTION

1. The Applicant's response filed on September 08, 2008 was received. Group 1, and species A, drawn to claims 1-3, 5 and 8-12 were elected.
2. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Election/Restrictions

3. Claims 13-22 are withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention and species, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on September 8, 2008.
4. Applicant's election with traverse of Group 1 and species A in the reply filed on September 8, 2008 is acknowledged. The traversal is on the ground(s) that the Office action does not establish that each and every element of the single general inventive concept of independent claims 1, 13-15 and 20 are known in the prior art, more specifically wherein sealing layers are located to surround the periphery of the electrode assembly. This is not found persuasive because MARUYAMA et al. teaches the technical feature of a fuel cell comprising gaskets (sealing layers) located on the

Art Unit: 1795

periphery of the electrode assembly (Fig. 1, col. 4, lines 28-43). Furthermore, the Applicant traverses the election of Species in that no species restriction can be carried out on a group of species that form a single general inventive concept. This is not found persuasive because Species A is drawn to disassembling a fuel cell by supplying a specific fluid to either the oxidizing or fuel conduits wherein Species B is drawn to disassembling a fuel cell having a coolant sealing layer, wherein a coolant is removed by supplying a fluid to the coolant conduit, Therefore said species are not drawn to a single general inventive concept.

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 103

5. The claim rejections under 35 U.S.C. 103(a) as unpatentable over Applicant's Admitted Prior Art and IWASE et al. on claims 1, 3, 5 and 10-15 are withdrawn, because Applicant's arguments filed on April 22, 2008 are persuasive.
6. The claim rejections under 35 U.S.C. 103(a) as unpatentable over Applicant's Admitted Prior Art, IWASE et al. and HOSHI on claims 2, 8-9 and 16-19 are withdrawn, because Applicant's arguments filed on April 22, 2008 are persuasive.
7. The claim rejections under 35 U.S.C. 103(a) as unpatentable over Applicant's Admitted Prior Art, IWASE et al. and TAKEGAWA on claim 20 is withdrawn, because Applicant's arguments filed on April 22, 2008 are persuasive.

8. The claim rejections under 35 U.S.C. 103(a) as unpatentable over Applicant's Admitted Prior Art, IWASE et al., TAKEGAWA and HOSHI on claims 21-22 are withdrawn, because Applicant's arguments filed on April 22, 2008 are persuasive.

9. Claims 1-3, 5, 8-9 and 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over BREAULT et al. (US 6,020,083).

As to Claims 1-3, 8 and 12, BREAULT et al. discloses a fuel cell comprising an electrode assembly comprising a pair of electrodes, sealing layers located to surround the periphery of the electrode assembly and a pair of separators (water transport plates) arranged across the electrode assembly and bonded to the sealing layers made from a fluororesin (col. 6, EXAMPLE), wherein one of the separators comprises a fuel gas conduit and the opposite separator comprises an oxidizing gas conduit (col. 4, lines 55-63 and Figs. 1-2). BREAULT et al. further discloses a disassembly method comprising the step of supplying water to the fuel cell assembly so as to heighten an in-passage pressure of the conduits in the separator plates as well as having the function of lowering an adhesive force of the sealing layers. (col. 6, EXAMPLE). BREAULT et al. discloses performing this method on only a half cell. However, it would have been obvious to one of ordinary skill in the art to perform this method on a full fuel cell assembly or fuel cell stack assembly (oxidizing and fuel gas conduits) to achieve the same results of disassembling the fuel cell, because one of ordinary skill in the art would recognize the supply of water can facilitate the separation of the entire electrode assembly.

As to Claim 5, BREAULT et al. teaches supplying water via a conduit in a separator plate (col. 6, EXAMPLE). Said separator which is being supplied water is kept

Art Unit: 1795

pressing or surrounded during the fluid supply, because the water introduced into the conduits applies a force in the direction of flow to keep the separator pressing.

As to Claim 9, BREAUTL et al. does not expressly disclose wherein the water having the function of lowering the adhesive force of the sealing layers has a higher temperature than a temperature of a fluid supplied for power generation of the fuel cell. However, it would have been obvious to one of ordinary skill in the art to supply the water for disassembly at a greater temperature because it is well known that heat or higher temperatures affects the reaction kinetics of the fluororesin sealing layers in such a way so as to speed up the degradation of adhesive properties and therefore promoting disassembly of the fuel cell.

As to Claim 11, BREAUTL et al. does not expressly disclose weakening a pressing force applied in a direction of making the pair of separators approach to each other during power generation of the fuel cell, prior to said step of providing the fluid supply for disassembly of the fuel cell. However, it would have been obvious to one of ordinary skill in the art to weaken a pressing force of said separators prior to the addition of water, so that the seal will be weaker and disassembly after the addition of the water will be enhanced.

10. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over BREAUTL et al. (US 6,020,083) as applied to claims 1-3, 5, 8-9 and 11-12 above, and further in view of IWASE et al. (US 5,718,984).

As to Claim 10, BREault et al. does not expressly disclose wherein an external force is additionally applied in directions of parting the pair of separators from each other during the fluid supply for disassembly of the fuel cell.

However, IWASE et al. teaches a disassembly method of a fuel cell wherein a peel-off operation is performed (electrodes are peeled in a direction of parting from the electrolyte) (col. 9, lines 15-25 and Fig. 6). At the time of the invention, it would have been obvious to one of ordinary skill in the art to modify the disassembly method of BREault et al. by applying an external force to the separators during the water supply for disassembly, so as to speed up the process for disassembling the fuel cell.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to ADAM A. ARCIERO whose telephone number is (571)270-5116. The examiner can normally be reached on Monday to Friday 8am to 5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dah-Wei Yuan can be reached on 571-272-1295. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1795

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

AA

/Dah-Wei D. Yuan/
Supervisory Patent Examiner, Art Unit 1795